PROGRESS

OF

MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

FRANCIS H. WILLIAMS, M.D.,

ASSISTANT PROFESSOR OF THERAPEUTICS IN HARVARD UNIVERSITY.

Ether and Chloroform.

"Ether and Chloroform" is the title of a recent article by Dr. J. R. Comte, Surgeon of the Hôpital Cantonal of Geneva. This writer, it will be remembered, published, in 1882, in a thesis, a carefully compiled statistical list ot all deaths under the anæsthetics recorded in medical literature up to that date. He is a believer in the superior safety of ether, and his article is a reply to one by Dr. Kappeler entitled "Chloroform *versus* Ether."

He prefaces his remarks by the statement that, in his opinion, an ideally perfect anæsthetic never will be found, meaning by that term one which intoxicates to the extent of prolonged unconsciousness and relaxation of the voluntary muscles, and does so with absolute safety. Since, then, *danger* is unavoidable in the administration of anæsthesia as it is performed *to-day*, the various elements which constitute that danger are subjected to a careful analysis for purposes of instruction. They are discussed in the following order: Clinical dangers in the process of administration of anæsthetic fumes; contraindications to the use of either or both of the agents of anæsthesia; dangers that may be inferred from a study of the author's mortuary statistics and the reports of autopsies, and, finally, inferences that may be drawn from experiments on animals made in physiological laboratories. From the consideration of these elements the following conclusions are made, and it is much to be regretted that the limits of this article do not permit us to follow the careful analysis by which they were reached by the author:

1. Anæsthesia can be obtained with ether as well as with chloroform, without using excessively large quantities or excluding atmospheric air.
2. The rapid method of forcing a cone holding twice the ordinary amount of ether down on the patient's face, so as to produce insensibility in two minutes, should be discarded, because it is intensely disagreeable, if not dangerous.

3. The inconveniences attending the use of these anæsthetics are about the same for both—that is to say, the disagreeable odor, the vomiting during the inhalation and afterward, the mental depression and malaise following the return to consciousness, etc.

4. The stage of excitement is neither longer nor more violent with ether than with chloroform; violent struggling should only occur in the intemperate. It is against ether that patients are at times excited and hilarious while regaining consciousness, and in some women hysterical manifestations come on at this time.

5. Contraindications to the use of ether are less numerous than chloroformists would have us believe. They may be narrowed down to the acute inflammatory affections of the respiratory tract, and all conditions of laryngeal and tracheal stenosis; it is also contraindicated whenever it is necessary to use the thermo-cautery on the head or its vicinity, or to operate in a small room near an open fire. The danger arising from the inflammability of the fumes may be materially decreased by certain precautions.

6. With these exceptions, ether deserves preference for all operations, particularly for dental surgery, the reduction of dislocations, and in all cases where anæsthesia must be maintained for a long time.

7. The method used by Kocher of producing insensibility with chloroform, and then giving ether for the rest of the time, has little to claim in its favor; for since one-half of the deaths under chloroform have occurred before anæsthesia was produced, only one-half of the danger of a fatal result is obviated by this procedure.

8. Ether is safer than chloroform. Although statistics do not furnish absolute proof of this, the presumption is so strong in its favor that it practically amounts to a certainty.

9. Supposing, for the moment, that deaths were equally common from the use of both drugs, ether should still be preferred, for the author's analysis of fatal cases shows that the serious nature of the operation, or the diseased condition of the victim as shown at autopsy, was usually sufficient to account for the mishap and relieve the surgeon, more or less, of his responsibility. His statistics also show the opposite to be the rule in the fatalities attributed to chloroform—that is to say, they frequently cannot be explained by the condition of the patient's previous health, the severity of the operation, or the result of the autopsy.

10. The breathing of the individual under ether should be continually watched, and although it is not necessary to pay the same degree of attention to the pulse, it is more or less dangerous to entrust etherization to any but a skilled physician. The chief danger of ether lies in too great confidence in its harmlessness.—*Revue Médicale de la Suisse Romande*, February 20, 1890.

ON DEATHS BY CHLOROFORM.

DR. B. W. RICHARDSON has recently published some observations on this subject in *The Asclepiad*, 1st quarter, 1890. He divides his subject for convenience into three heads: 1, comparative death by chloroform; 2, physiological or uncomplicated death by chloroform; 3, pathological death by chloroform.

In his first division he calls attention to the fact that in studying the fatal action of chloroform on animals, and then applying these results to mankind, inferences are apt to be drawn which are not applicable, because of essential differences existing between the subjects experimented upon and the human being. In the first place, in man the element of fear may play even a fatal part, as has often been shown. While an animal goes to sleep with the anæsthetic automatically—without a suspicion that it may never wake again—the very thought of dying under anæsthesia, of itself, whether expressed or concealed, involves serious risk to a human subject who has heard of the dangers it has to encounter, and firmly believes in them all. Fear may be the only explanation for many deaths where the wrist-pulse stops suddenly and the respiration soon afterward, before any of the usual phenomena of asphyxia have appeared. It also explains the frequent failure of artificial respiration in such cases; in animals it is almost always successful.

There are physical differences, too, as well as mental, which should be considered in applying the results of experiments on animals directly to the human race in its present civilization. To-day we have in our midst a large and ever-present group of individuals designated as the *morituri*—those who, from one cause or another, are in such proximity to death that they are at any moment ready to die from trifling external causes. This class does not exist among the animals, if we except those much reduced by old age, exhaustion, or starvation. Dr. Richardson says: "From the first week when chloroform was brought into practice unto the present hour I have read all available reports of deaths from chloroform. I had the privilege of assisting Snow in the collection of the data published in his posthumous work which I edited, and I am driven from this long and unique experience to the conclusion that, in many instances, death from chloroform in man has occurred amongst the *morituri*, and from conditions in which the physiological death by chloroform, as it is seen in the lower animals, has played no such commanding part as to lead to the conclusion that death occurred from uncomplicated asphyxia." Another physical difference is to be found in the condition of shock so frequently referred to by surgeons—a condition which the recent experiments have not shown to be producible in animals, and one which might well account for some of the deaths attributed to chloroform.

As to the second division of his paper, the physiological death of chloroformed animals, the writer expresses the belief that the immediate cause of death is not from the absorption of the vapor into the blood, but from the action of the absorbed vapor on the nervous system causing the subject spasmodically to cease to breathe; in other words, inducing apnœa, under which arrest of the heart's action soon follows. This view had already been expressed several years ago by Dr. Richardson.

In the third division, the pathological death by chloroform, the writer reiterates his classification published in 1870, in which he defines four modes of death by this agent in the human subject; namely, by syncopal apnœa, by epileptiform syncope, by paralysis of the heart and of the muscular system generally, and by chloroform combined with surgical shock. In the first variety breathing ceases, lividity, coldness, and insensibility follow, and the heart stops. This approaches quite closely to the physiological form of animals. The second class includes cases dying during the stage of excitement.

The third variety occurs after prolonged and gradual anæsthetizing; death is preceded by intermissions of the pulse, etc.; while in the last mode of dying surgical shock and chloroform combine to produce failure of the heart and syncope.

THE THERAPEUTIC USE OF CAMPHORIC ACID.

Since the publication of articles on this subject by Fürbringer and by Reichert, camphoric acid has been extensively introduced in the clinic of Professor Mosler, at the Royal University Hospital at Greifswald, and a report of the results obtained therewith forms the subject-matter of an interesting communication by DR. BERNHARDT HARTLEIB in a recent number of the *Wiener medicinische Presse* (Feb. 23, 1890). The action of this drug was studied in three classes of diseases; namely, in acute and chronic catarrhal affections of the respiratory mucous membrane, in acute and chronic cystitis, and in the night-sweats of phthisis.

In the first class of cases, ordinary sore throat (angina) and catarrhal pharyngitis, were much improved by using a one-half to one per cent. solution as a gargle. The patients noticed their own rapid improvement, and expressed their satisfaction with the treatment, yet it is doubtful if it really acted more promptly than other remedies. Fourteen cases of laryngitis, in which the solution was either sprayed on or applied with a brush, also furnished gratifying results. But the inhalations of the drug administered for chronic bronchitis or pulmonary tuberculosis were not as successful. Eighteen patients received this form of treatment, and no improvement in their physical condition could be claimed, although several declared that they were relieved of the feeling of weight in the chest, so that they breathed more easily. The strength of the solutions used for inhalation varied from one to four per cent. As camphoric acid is only soluble in water to the extent of nine-tenths of one per cent., alcohol, glycerine, and water made alkaline by the addition of bicarbonate of soda, were separately used as media to dissolve it.

Excellent results were obtained in the second class of cases, *i. e.*, cystitis. There were ten of these cases under treatment with camphoric acid, five acute and five chronic. Of the latter, three were reported well six weeks after all medication had been stopped, the fourth was unfortunately obliged to leave before it was prudent to do so, and the fifth, a very obstinate case of four years' duration, was at first much improved, but the treatment was changed, and ten days later he had a relapse. Of the five acute cases, four made a complete recovery before leaving the hospital, while the fifth, still having a slight trace of pus in the urine, left against advice.

In practice, the writer recommends washing out the bladder twice a day with a one-half of one per cent. solution, and leaving an ounce or two inside when the catheter is withdrawn. After the camphoric acid has been employed in this way for several weeks, the strength of the solution may be increased. Where pyelitis is present, as well as cystitis, the drug may be simultaneously administered by the mouth. If the bladder be very irritable, local treatment should be suspended and eight grains (one-half of a gramme) given by the mouth three times a day. For convenience in irrigating the bladder, Hartleib advises keeping a twenty per cent. solution of camphoric acid in alcohol;

three drachms of this in a pint of lukewarm water furnishes approximately the required one-half per cent. solution. Among the cases of cystitis was one of gonorrhœal origin; it was apparently cured.

In treating the third class of cases, the night-sweats of phthisis, the usual amount given was fifteen grains (one gramme) at bed-time, although in obstinate cases thirty grains (two grammes) may be required. Hartleib does not believe it necessary to give as much as Fürbringer had recommended. Thirteen patients of this class received treatment, twelve of them with the result of stopping the night-sweats; the thirteenth, a phthisical patient in the surgical wards, with extensive tubercular disease of bone, received the usual amount (fifteen grains) for several nights without producing any effect; a larger dose was not tried.

The disagreeable after-effects of camphoric acid were few. One patient, who had taken fifteen grains (one gramme) three times a day, complained of severe pain in the region of the kidneys, which disappeared on stopping all treatment. Two patients, whose bladders were frequently irrigated, developed a slight swelling of the glans, which soon subsided. One consumptive patient vomited a dose of thirty grains (two grammes) of the acid, but retained half that amount without difficulty. Continued use of it does not appear to affect the stomach or intestine, in fact its action in proper doses is quite harmless.

THE ACTION OF OLIVE OIL ON THE SECRETION OF BILE.

Although there is nothing very new in the administration of olive oil for the relief of biliary colic, the following abstract is inserted in the hope of shedding a little light on the obscure question of how it acts to relieve the pain and other symptoms of this distressing affection.

In an article which DR. SEIGFRIED ROSENBERG read at a meeting of the Medical Society of Berlin, entitled "The Use of Olive Oil in the Treatment of Biliary Colic," the writer reports three cases successfully treated by this method. Including his own, he finds recorded in the medical journals twenty-one cases in which the oil treatment has been tried; in nineteen of these the patients were described as much relieved or well at the time of their discharge, while in two cases only no improvement resulted.

In considering the *modus operandi* of this remedy, he takes exception to the theory which assumes that the oil in some manner finds its way into the biliary passages, where it produces a softening of the gall-stones, thus facilitating their passage along the duct. He believes that the exhibition of a large amount of oil or fat in the stomach and duodenum excites a correspondingly large flow of bile, and that this flushing of the channels with bile dislodges the calculi and cures the colic. He argues that since bile plays so important a *rôle* in the absorption of fat, it is fair to assume that the presence of fatty food in some way calls forth the bile which is so necessary for its assimilation. In his endeavor to prove this he tried a number of experiments on two dogs with permanent biliary fistulæ, giving them in the morning a large dose of oil (sometimes a quarter of a pound of solid fat of ham or bacon was substituted by way of variety), and noting each hour the amount of bile which had flowed from the fistula. In every case he found a very considerable increase in the amount and duration of the flow over that produced by an ordinary meal of carbohydrates and albuminoids. It was also considerably more than the secretion he could produce by giving salicylate of soda or bile itself, both of which he had previously regarded as active excitors of the biliary function. He concludes from his experiments that oil acts as a powerful cholagogue, perhaps the most active of any, and to this action he attributes his success in the treatment of gall-stones.

Dr. Rosenberg considers it very important to flavor and disguise the oil as much as possible, for the very idea of drinking a glass of it is extremely disgusting to patients. To remove the nauseous taste, he adds one-quarter of one per cent. of menthol and ten or fifteen per cent. of brandy; and also advises adding the yolks of two eggs, finely divided and worked in, so as to be perfectly smooth; this materially alters the appearance of the oil. The dose should be from five and a quarter to seven ounces (150 to 200 grammes); it is best to give about an ounce at a time, in such a way that the whole amount will be consumed in three hours.—*Therapeut. Monatshefte*, Dec. 1889.

CERTAIN USES OF THE SALICYLATE OF SODA.

In a recent article, **PROF. B. STILLER**, of Budapest, calls the attention of the profession to some of the less well known therapeutic uses of the salicylate of soda. After referring to the remarkable advance which has been brought about by the use of this drug in the treatment of acute articular rheumatism, he claims that the smaller percentage of cardiac complications now seen is due to the more speedy relief of pain and the fall of temperature usually obtained. He then passes quickly over the well-known antipyretic, antineuralgic, and antiseptic properties of the drug, to dilate at some length on its usefulness in the treatment of diseases of the liver.

Professor Stiller's attention was first called to the cholagogic action of the salicylate of soda by some articles in English medical journals. Since then he has made use of this drug for the treatment of hepatic disease, and has obtained most brilliant results, especially in cases of impacted gall-stones. Details are given of two obstinate cases of that disease. Beside the administration four times a day of half a gramme (seven and a half grains) of salicylate of soda, given in soda water, the patients were ordered to stay in bed, have a light nutritious diet (for the first few days restricted to liquids), and to apply large flaxseed poultices to the abdomen. Morphine was occasionally given hypodermically, but only during the first two or three days of the treatment was there any indication for its employment. When the pain and vomiting had stopped, the patients soon regained their accustomed appetite, and were sent to Carlsbad or Vichy, to take a course of mineral waters and complete the cure.

The beneficial action in these cases, Professor Stiller considers due to the increased secretion of a rather thin and fluid bile, which, he says, has been demonstrated experimentally to occur in animals. Alkaline and saline spring-waters, especially the hot springs of Carlsbad, exert, he thinks, a similar action. Turpentine likewise increases the flow of bile. He considers the utility of administering olive oil to dissolve gall-stones as yet unproven; in his own practice he has refrained from giving it, owing to the large and nauseous dose, while, at the same time, the analgesic action of the salicyl compounds has led him to give them the preference in cases of painful biliary colic. Cases do occur in which the salicylate of soda gives no relief. These patients, in his opinion, seldom improve without surgical aid. If the obstruction be in the hepatic or the cystic duct, instead of the common duct as is usually the case, an increased flow of bile in no way facilitates its removal. In more than one of his cases several gall-stones were discharged; these may be dislodged by the greater velocity of the current of bile passing over them, and the succeeding calculi may not cause pain, provided the duct be left sufficiently dilated after the passage of the first one.

In acute catarrhal jaundice, Stiller has not as yet given the salicylate of soda, but says he means to administer it in small and frequently repeated doses, hoping thus to avoid its irritating action on the gastric catarrh which usually accompanies and is frequently primary to the duodenitis.

Among other uses of the drug, he has found it a serviceable diuretic in cases of pleurisy with effusion. To produce diuresis he gives daily three or four grammes (forty-five to sixty grains) in divided doses at very frequent intervals. In cases of sciatica (not of long-standing) he has attributed marked benefit to its use; and recent peripheral paralyses of the facial nerve are frequently affected by the salicylate in a manner little short of the marvellous. —*Wiener medicin. Presse*, Nos. 1 and 2, 1890.

CHLORALAMIDE AS A HYPNOTIC FOR THE INSANE.

"Of all the somnifacients discovered of late years," says DR. S. A. K. STRAHAN, in *The Lancet* (February 15, 1890), "none is likely to prove a more certain sleep-producer, and, at the same time, be more innocent or otherwise agreeable, than chloralamide." Among the insane it has acted to induce sleep as certainly, if not as promptly, as chloral itself. It rarely failed to produce the desired effect, even in extreme maniacal excitement, and when it did fail it did not increase that excitement as other drugs have been found to do; on the contrary, it always calmed the patient more or less.

From thirty-five to fifty grains were usually sufficient to give from five to ten or more hours' refreshing sleep, and with fifty-five grains some effect was always obtained, even in the worst case of subacute mania or excitement following epileptic seizures. Patients were calm, and yet did not sleep heavily —that is to say, it was always easy to rouse them—and they usually declared themselves much refreshed on waking. In most cases sleep came on about an hour and a half after taking the medicine, although this interval varied from twenty minutes to three hours; two patients, however, were a little drowsy on the following day, and several, contrary to their custom, slept the next night without any medicine.

Chloralamide was not observed to affect the temperature, respiration, or pulse; in fact, the writer believes with Kuy, of Strassburg, that it acts precisely like chloral, only without any depressant effect on the heart. Headache, and the ataxic symptoms, sometimes seen after the use of sulphonal, were not noted; nor was any gastric trouble or loss of appetite attributed to its use. In fact, it is a very useful and safe hypnotic, equal but not superior in efficiency to paraldehyde; it is, however, pleasanter to take, and is free from the disadvantage of imparting any disagreeable odor to the breath.

The Clinical Use of Theobromine as a Diuretic.

Dr. Christian Gram, of Copenhagen, has published in the *Therapeutische Monatshefte* an account of his clinical experience with this drug, begun in the summer of 1887. In his earlier observations he used the pure theobromine, and, although the action was frequently tardy and uncertain, the results were in some cases good ones. He attributed this uncertainty of action to slow absorption, for the pure theobromine is almost insoluble, and after various trials of its other salts he selected the sodio-salicylate, and has used it exclusively in the later observations.

Eight selected cases are detailed in tabular form, so as to show the daily amount of urine, its specific gravity, the percentage of albumin, and the daily secretion of urea. All of them were suffering either from advanced cardiac disease or chronic nephritis, and in most of them sphygmographic and sphygmomanometric records were also kept. The results show, it is claimed, that the pure theobromine is absorbed with difficulty; that when absorbed it is a powerful diuretic; that it affects the kidneys directly, and not through the medium of the heart and circulation; that the sodio-salicylate of theobromine is readily absorbed, and is likewise an active diuretic. It appears to be harmless; only once was any unpleasant after-effect imputed to it—a slight feeling of faintness. The usual daily dose was a drachm and a half, or fifteen grains, every four hours. The writer considers that the diuretic action was proved beyond question in all his cases, except those where either the medicine was not absorbed, or where the renal epithelium was so extensively degenerated that it was impossible for it to secrete any longer.—*Therapeutische Monatshefte*, January, 1890.

The So-called Double-cyanide of Zinc and Mercury.

As our readers already know, a new, stable and but slightly soluble antiseptic was introduced by Sir Joseph Lister last November—to wit, a double compound of cyanide of mercury and cyanide of zinc, obtained by adding a soluble zinc salt to a solution of the cyanide of mercury and of potash. It is considered an excellent material to add to gauze for antiseptic dressings, and has been popularly known under the name of "the double-cyanide of zinc and mercury." This popular name is, in all probability, an incorrect one, for in a recent report of experiments conducted in the Laboratory of the Pharmaceutical Society, **Professor Danstan** and **Mr. Block** (who performed these experiments solely to find out if a double-salt was present) assert that no such double-cyanide of zinc and mercury can be formed; that in the new gauze the simple soluble cyanide of mercury is present in considerable quantity (perhaps all the mercury is in that form), but is prevented from dissolving by the mechanical presence of the precipitate of the zinc salt, and that probably all the mercuric cyanide may be removed by using a sufficiently large excess of water. In the discussion which followed the reading of this paper, Lister said that these experiments had a very important practical bearing—namely, that manufacturers and others making the new gauze must be very careful to follow his directions, and not use a larger amount of water than he had specified, both for the impregnating solution and also for the starching, as otherwise a gauze would be produced deficient, if not almost free, from the cyanide of mercury.—*Lancet*, February 22, 1890.

STROPHANTHINE AND OUABAINE.

At a recent meeting of the Académie de Médecine, **DR. PANAS** made some remarks upon these new local anæsthetics. Ever since the discovery of the remarkable local action of the salts of cocaine, he said, chemists have been trying to obtain similar effects from other organic compounds. The hydrochlorate of erythrophlein was believed to be a local anæsthetic in the eye, but its action is slow and unreliable, and it is apt to set up a conjunctivitis; other substances have given no better results. The latest which have been tried, ouabaïne and strophanthine, are said, in weak aqueous solution, to produce complete and prolonged anæsthesia in the conjunctiva and cornea of animals, with a slight contraction of the pupil, followed by dilatation. Dr. Panas has introduced these drugs into the eyes of rabbits and men, and concludes that ouabaïne, although a good local anæsthetic for the rabbit, does not produce this effect in mankind, while strophanthine, although a fairly good anæsthetic, is too irritating a substance to use in preference to cocaine, which is, in fact, still without a rival.—*La Semaine Médicale*, February 19, 1890.

ANNIDALINE, A SUBSTITUTE FOR IODOFORM.

This new substance, which has been brought forward by **MESSINGER** and **NORTMANN** as a substitute for iodoform, is probably a combination of two molecules of thymol with three atoms of iodine—in other words, a triïodide of dithymol, whereas aristol is a diïodide of dithymol. It is a reddish-brown powder, which may be kept for several months, at least with proper care. It is decomposed by the action of light and moisture, giving off iodine and turning yellow. It is insoluble in water, slightly soluble in alcohol, readily so in chloroform and ether.—*Journal de Médecine de Paris*, February 8, 1890.

MEDICINE.

UNDER THE CHARGE OF

WILLIAM OSLER, M.D., F.R.C.P. LOND.,

PHYSICIAN-IN-CHIEF OF JOHNS HOPKINS HOSPITAL, BALTIMORE.

AND

J. P. CROZER GRIFFITH, M.D.,

INSTRUCTOR IN CLINICAL MEDICINE IN THE UNIVERSITY OF PENNSYLVANIA.

INFLUENZA.

The journals are still full of this subject, bringing forward somewhat that is new, and much that is confirmatory of what has been already recently written regarding it.